Pixel.js and the Classification Method (CM) as a Rodan Workflow

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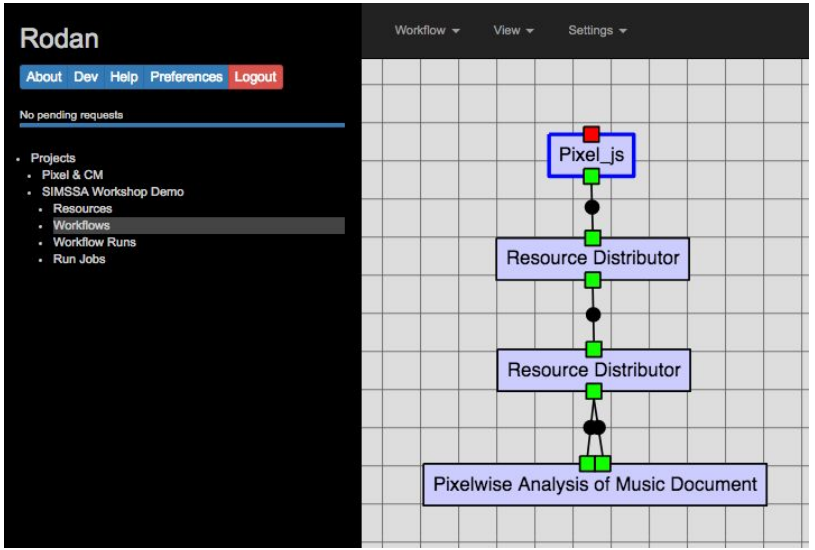
Rodan

- Workflow engine
- Developed primarily by Andrew Hankinson, Ryan Bannon, and Ling Xiao Yang
- Users upload files (resources)
- Allows chaining of different processes (jobs) to create a workflow



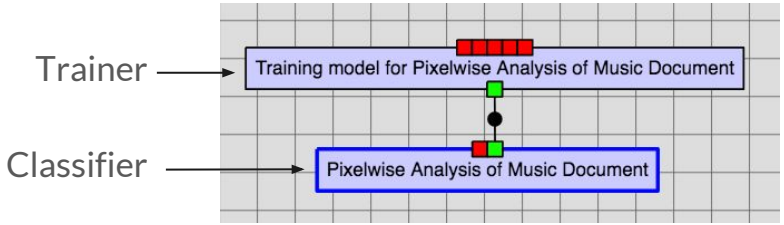
Hankinson, Andrew. 2014. “Optical music recognition infrastructure for large-scale music document analysis.” PhD diss., Montreal, Canada: Schulich School of Music, McGill University.

Objectives

- Classify large manuscripts into layers using Pixel.js
  - Manuscript: notes
  - Map: bodies of water, parks
- Implement a Rodan workflow with Pixel and CM
  - Generate a background layer in Pixel.js

The Classification Method with Pixel.js

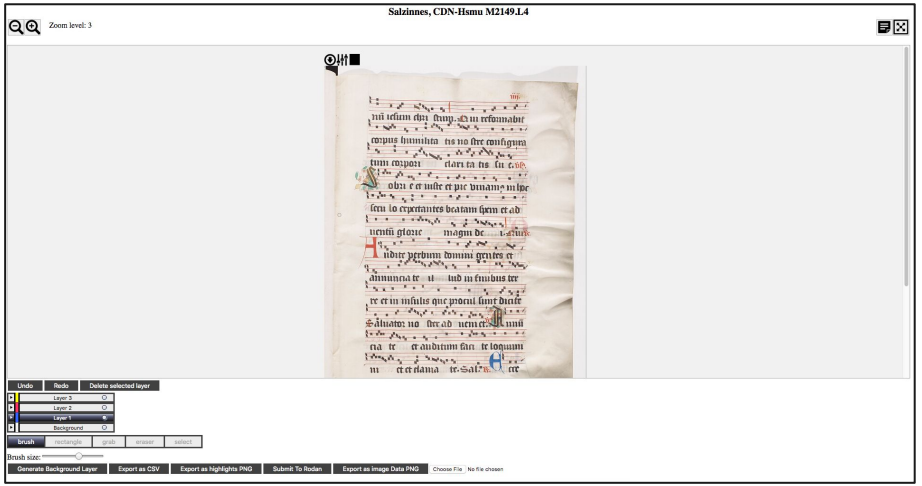
- Developed by Jorge Calvo Zaragoza
- Workflow
  - Trainer: input layers, output model
  - Classifier: input model, output classified image
- Classifying shortcut
  - **Saves time** and user-labor



Calvo-Zaragoza, Jorge, Gabriel Vigliensoni, and Ichiro Fujinaga. "Pixelwise classification for music document analysis." In 2017 Seventh International Conference on Image Processing Theory, Tools and Applications (IPTA), pp. 1-6. 2017.

Pixel.js

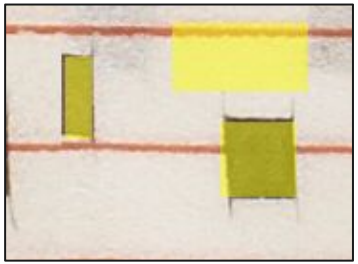
- Developed by Zeyad Saleh & Ké Zhang
- A web based drawing/layering plugin for ground truth creation
- Built on Diva.js
  - Web based document viewer
  - Andrew Hankinson, Wendy Liu, Laurent Pugin, Ichiro Fujinaga



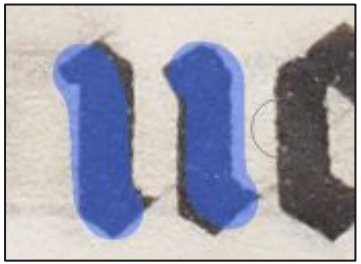
Hankinson, Andrew, Wendy Liu, Laurent Pugin, and Ichiro Fujinaga. 2012. “Diva: A Web-Based Document Image Viewer.” In Proceedings of the Conference on Theory and Practice in Digital Libraries. Heidelberg: Springer.

How does it work?

- Divide images into color coded layers
  - Pixel tools: brush, rectangle, eraser, select
  - Layer for music symbols, staff lines, text, **background**



Rectangle Tool



Brush Tool

Saleh, Zeyad, Ké Zhang, Jorge Calvo-Zaragoza, Gabriel Vigliensoni, and Ichiro Fujinaga. "Pixel. js: Web-Based Pixel Classification Correction Platform for Ground Truth Creation." In 14th IAPR International Conference on Document Analysis and Recognition (ICDAR), vol. 2, pp. 39-40. 2017.

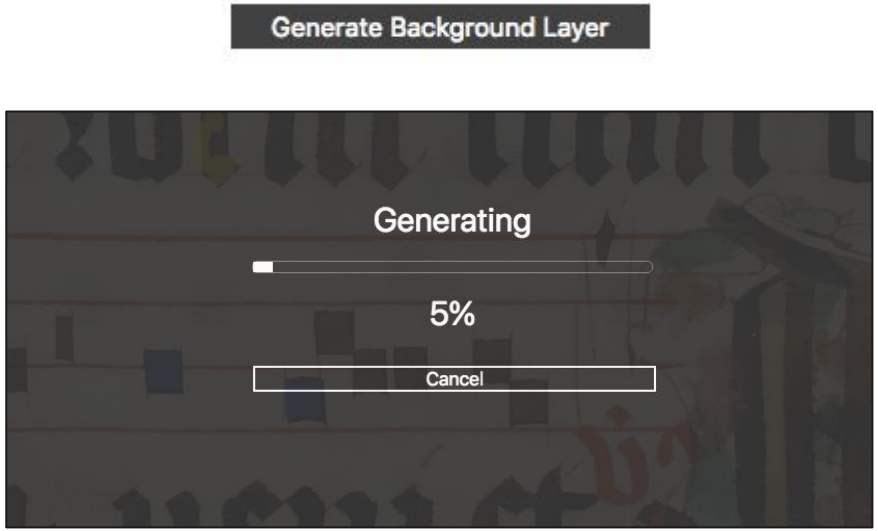
Background Layer in Pixel.js

- The CM trainer requires all layers
  - No concept of “everything else”
- Original implementation
  - Path/shape wise generation
  - Not compatible with the CM classifier, some bugs

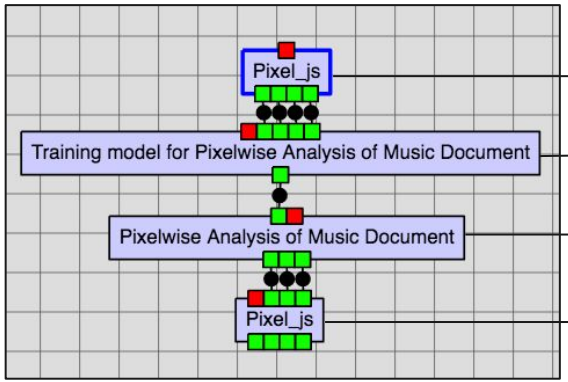
Current Development

- Pixel-wise generation
  - Fixes bugs
  - Slower (minutes)

- Button, progress bar



Rodan Workflow



Pixel.js : user classifies a portion of a score

Trainer : generates a training model from ground truth

Classifier : use model to classify image

Pixel.js : correct classification

Repeat : optimize training model

Demo

Thank you!

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